Table 1. Whole-Rock Analytical Parameters

Parameter or Analyte	Phase*	Method	Detection Limit	Units
Aluminum – ICP-OES	Solid	SW – 846 6010A	0.05	mg/Kg
Antimony – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Arsenic – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Barium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Beryllium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Boron – ICP-OES	Solid	SW – 846 6010A	0.05	mg/Kg
Cadmium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Calcium – ICP-OES	Solid	SW – 846 6010A	0.1	mg/Kg
Chromium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Cobalt – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Copper – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Iron – ICP-OES	Solid	SW – 846 6010A	0.05	mg/Kg
Lead – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Magnesium – ICP-OES	Solid	SW – 846 6010A	0.1	mg/Kg
Manganese – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Mercury – AA Cold Vapor	Solid	SW - 846 7471	0.05	mg/Kg
Molybdenum ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Nickel – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Potassium – ICP-OES	Solid	SW – 846 6010A	0.5	mg/Kg
Selenium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Silver – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Sodium – ICP-OES	Solid	SW – 846 6010A	0.1	mg/Kg
Thallium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Total Petroleum Hydrocarbons	Solid	EPA 8015 Mod EPA 8020 EPA 413.1; 418.1	10	mg/Kg
Total Recoverable Metals – Acid Digestion	Solid	SW – 846 3050A	--	--
Volatile Organic Compounds	Solid	EPA 8240	0.1	mg/Kg
Vanadium – ICP-MS	Solid	SW – 846 6020	1	mg/Kg
Zinc – ICP-MS	Solid	SW – 846 6020	10	mg/Kg

and maintenance costs reduced by stabilizing areas that have been disturbed.

The Orizaba soil is in capability subclass VIIw, nonirrigated, and in range site 27-5. The Delp soil is in capability subclass VIIs, nonirrigated, and in range site 27-16.

491—Otomo gravelly sandy loam, 4 to 15 percent slopes. This very shallow, well drained soil is on alluvial fan remnants. It formed in alluvium derived from mixed rock sources. Elevation is 5,000 to 5,800 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is light yellowish brown gravelly sandy loam about 4 inches thick. The upper 6 inches of the underlying material is very pale brown very gravelly sandy loam, the next 13 inches is a hardpan that is cemented with silica and lime, and the lower part to a depth of 60 inches or more is extremely gravelly loamy sand that is cemented with silica and lime. Depth to the hardpan is 6 to 14 inches.

Included in this unit are about 6 percent Cleaver soils on alluvial fans (range site 27-18), 5 percent Malpais soils in drainageways and on inset alluvial fans (range site 27-18), and 4 percent Yerington soils in areas of eolian deposits (range site 27-9). Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Otomo soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 6 to 14 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used mainly for livestock grazing. It is also used for wildlife habitat.

The potential plant community on this unit is mainly Indian ricegrass, Bailey greasewood, and shadscale. The present vegetation in most areas is mainly Bailey greasewood, shadscale, and bottlebrush squirreltail. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and very low available water capacity.

This unit is limited for roads because of depth to the hardpan. Roads should be designed to minimize cuts because of the limited depth to the underlying hardpan.

This map unit is in capability subclass VIIs, nonirrigated, and in range site 27-18.

501—Parran silty clay loam. This very deep, somewhat poorly drained soil is on lake plains. It formed in lacustrine sediment derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,200 to 4,400 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is grayish brown silty clay loam about 3 inches thick. The upper 37 inches of the underlying material is dark grayish brown silty clay that is more than 2 percent salt, and the lower part to a depth of 60 inches or more is pale brown, mottled silty clay loam with thin lenses of loamy fine sand.

Included in this unit are about 10 percent Wabuska soils that are strongly saline and alkali and are on low lake terraces (range site 27-5) and 5 percent Isolde soils on stratified dunes and hummocks (range site 27-16). Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Parran soil is very slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 2.5 to 3.5 feet from November through March. Runoff is very slow to ponded, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is strongly salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly black greasewood, shadscale, and alkali seepweed. The present vegetation in most areas is mainly iodinebush, seepweed, and black greasewood. The production of forage is limited by the low average annual precipitation and the high content of salts and alkali in the soil. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and the content of salts and alkali in the soil.

This unit is limited for roads because of the hazard of frost heaving and the high content of clay in the soil. Roads should be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIIw, nonirrigated, and in range site 27-25.

511—Patna fine sand, 4 to 15 percent slopes. This very deep, somewhat excessively drained soil is on the leeward side of hills and occurs as small dunes. It formed in eolian sand derived from various kinds of rock. Elevation is 4,200 to 6,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is brown fine sand about 5 inches thick. The subsoil is yellowish brown and brown fine sandy loam about 16 inches thick. The substratum to a depth of 60 inches or more is brown loamy fine sand.

Included in this unit are about 5 percent Theon soils on hillsides (range site 27-9) and 5 percent Malpais soils in drainageways and on associated alluvial fans (range

site 27-18). Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Patna soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly Indian ricegrass, fourwing saltbush, needleandthread, and Bailey greasewood. The present vegetation in most areas is mainly Indian ricegrass, Nevada dalea, hairy horsebrush, and Nevada ephedra. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and the sandy texture of the surface layer. Livestock grazing should be managed to protect the unit from blowing and drifting sand.

This unit is limited for roads because of slope. Cutting and filling are reduced by building roads in the less sloping areas of the unit. Roads should be provided with adequate surface drainage. Erosion can be controlled and maintenance cost reduced by stabilizing areas that have been disturbed. During prolonged dry periods, roads are difficult to maintain because of the presence of loose sand. This results in poor traction and an increased risk of soil blowing.

This map unit is in capability subclass VIIs, nonirrigated, and in range site 27-9.

512—Patna fine sand, 15 to 30 percent slopes. This very deep, somewhat excessively drained soil is on the leeward side of hills and occurs as small dunes. It formed in eolian sand derived from various kinds of rock. Elevation is 4,200 to 6,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is light brownish gray fine sand about 5 inches thick. The subsoil is yellowish brown and brown fine sandy loam about 16 inches thick. The substratum to a depth of 60 inches or more is brown loamy fine sand and sand.

Included in this unit are about 5 percent Theon soils on hillsides (range site 27-9) and 5 percent Malpais soils in drainageways and on associated alluvial fans (range site 27-18). Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Patna soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly Indian ricegrass, fourwing saltbush, needleandthread, and Bailey greasewood. The present vegetation in most areas is mainly Indian ricegrass, Nevada dalea, hairy horsebrush, and Nevada ephedra. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and the sandy texture of the surface layer. Livestock grazing should be managed to protect the unit from blowing and drifting sand.

This unit is limited for roads because of slope. Cutting and filling are reduced by building roads in the less sloping areas of the unit. Roads should be provided with adequate surface drainage. Erosion can be controlled and maintenance cost reduced by stabilizing areas that have been disturbed. During prolonged dry periods, roads are difficult to maintain because of the presence of loose sand. This results in poor traction and an increased risk of soil blowing.

This map unit is in capability subclass VIIe, nonirrigated, and in range site 27-9.

514—Patna loamy sand, silty substratum, 0 to 2 percent slopes. This very deep, somewhat excessively drained soil is on old lake plains. It formed in eolian deposits derived from various kinds of rock and in by lacustrine sediment. Elevation is 4,200 to 5,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 130 days.

Typically, the surface layer is light brownish gray loamy sand about 8 inches thick. The subsoil is pale brown sandy loam about 7 inches thick. The upper 28 inches of the substratum is light brownish gray and pale brown sand and loamy sand, and the lower part to a depth of 60 inches or more is gray silt loam that has iron oxide mottles.

Included in this unit are about 5 percent Isolde soils on stabilized dunes (range site 27-23) and 5 percent Hough soils in slightly higher lying areas (range site 27-18). Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Patna soil is moderately rapid in the subsoil and moderate in the lower part of the substratum. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

Most areas of this unit are used for livestock grazing and homesite development. A few areas are used for irrigated cultivated crops.

The potential plant community on this unit is mainly Indian ricegrass, fourwing saltbush, needleandthread,

The potential plant community on the Chill soil is mainly desert needlegrass, Thurber needlegrass, and Wyoming big sagebrush. The present vegetation in most areas is mainly desert needlegrass and Wyoming big sagebrush. The production of forage is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very low available water capacity.

The Uripnes soil is limited for roads because of steepness of slope. The weathered bedrock can be excavated with power equipment. Cutting and filling are reduced by building roads in the less sloping areas of the Chill soil. Roads should be provided with adequate surface drainage. Erosion can be controlled and maintenance cost reduced by stabilizing areas that have been disturbed.

This map unit is in capability subclass VIIs, nonirrigated. The Uripnes soil is in range site 27-17, and the Chill soil is in range site 26-11.

551—Rawe gravelly sandy loam, 4 to 15 percent slopes. This very deep, well drained soil is on old alluvial fans. It formed in alluvium derived dominantly from basic igneous rock. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 51 degrees F, and the average frost-free period is 100 to 130 days.

Typically, the surface layer is light gray gravelly sandy loam about 1 inch thick. The subsoil is brown gravelly clay about 9 inches thick. The substratum to a depth of 60 inches or more averages very gravelly sandy loam that is light brownish gray.

Included in this unit are about 6 percent Lox soils on fans in slightly lower lying areas (range site 27-24), 5 percent Patna soils on stabilized hummocks (range site 27-9), and 4 percent Perazzo soils on alluvial fan remnants (range site 27-18). Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Rawe soil is slow to a depth of 10 inches and moderately rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly shadscale, Bailey greasewood, Indian ricegrass, and bud sagebrush. The present vegetation in most areas is mainly shadscale, Bailey greasewood, and Indian ricegrass. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

Cutting and filling are reduced by building roads in the less sloping areas of this unit.

This map unit is in capability subclass VIIs, nonirrigated, and in range site 27-18.

552—Rawe complex, 2 to 4 percent slopes. This map unit is on old alluvial fans. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 130 days.

This unit is 45 percent Rawe gravelly sandy loam and 40 percent Rawe loamy sand. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 6 percent Isolde soils on stabilized low dunes and hummocks (range site 27-23), 5 percent Malpais soils in drainageways and on associated alluvial fans (range site 27-18), and 4 percent Patna soils on stabilized hummocks (range site 27-9). Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Rawe gravelly sandy loam is very deep and well drained. It formed in alluvium derived dominantly from basic igneous rock. Typically, the surface layer is light gray gravelly sandy loam about 1 inch thick. The subsoil is brown gravelly clay about 9 inches thick. The substratum to a depth of 60 inches or more is light brownish gray very gravelly sandy loam.

Permeability of the Rawe gravelly sandy loam is slow to a depth of 10 inches and moderately rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

The Rawe loamy sand is very deep and well drained. It formed in mixed alluvium overlain by wind-deposited material derived dominantly from basic igneous rock. Typically, the surface layer is light brownish gray loamy sand about 12 inches thick. The subsoil is brown gravelly clay about 9 inches thick. The substratum to a depth of 60 inches or more is light brownish gray gravelly sandy loam.

Permeability of the Rawe loamy sand is slow to a depth of 21 inches and moderately rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential and present plant community on the Rawe gravelly sandy loam is mainly Indian ricegrass, Bailey greasewood, and shadscale. The potential plant community on the Rawe loamy sand is mainly Indian ricegrass, fourwing saltbush, and needleandthread. The present vegetation in most areas is mainly Indian ricegrass and shadscale. Livestock grazing should be managed to protect the soils from blowing and drifting

sand. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

Roads can easily be constructed and maintained on this unit.

This map unit is in capability subclass VIIs, nonirrigated. The Rawe gravelly sandy loam is in range site 27-18, and the Rawe loamy sand is in range site 27-

553—Rawe-Malpais association. This map unit is on gently sloping to strongly sloping dissected alluvial fans and in associated drainageways. Slope is 2 to 15 percent. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 51 degrees F, and the average frost-free period is 100 to 130 days.

This unit is 60 percent Rawe gravelly sandy loam and 25 percent Malpais gravelly sandy loam. The Rawe soil is on remnants of old alluvial fans, and the Malpais soil is on drainageways and on alluvial fan skirts.

Included in this unit are about 6 percent Perazzo soils on alluvial fans (range site 27-18), 5 percent Cleaver soils on alluvial fans (range site 27-18), and 4 percent Petna soils on stabilized low dunes and hummocks. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

The Rawe soil is very deep and well drained. It formed in alluvium derived dominantly from basic igneous rock. Typically, the surface layer is light gray gravelly sandy loam about 1 inch thick. The subsoil is brown gravelly clay about 9 inches thick. The substratum to a depth of 60 inches or more is light brownish gray very gravelly sandy loam.

Permeability of the Rawe soil is slow to a depth of 10 inches and moderately rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Malpais soil is very deep and well drained. It formed in alluvium derived from various kinds of rock. Typically, the surface layer is pale brown gravelly sandy loam about 3 inches thick. The underlying material to a depth of 60 inches or more is brown to grayish brown extremely cobbly sandy loam and very gravelly sandy loam.

Permeability of the Malpais soil is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential and present plant community on this unit is mainly Indian ricegrass, Bailey greasewood, and shadscale. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

Cutting and filling are reduced by building roads in the less sloping areas of this unit. Unless an adequate wearing surface is maintained, stones and cobbles in the Malpais soil create road hazards and increase maintenance cost.

This map unit is in capability subclass VIIs, nonirrigated, and in range site 27-18.

561—Rebel sandy loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived from various kinds of rock. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is brown sandy loam about 14 inches thick. The subsoil and substratum to a depth of 60 inches or more average sandy loam that is yellowish brown.

Included in this unit are about 6 percent Haybourne soils on the upper end of alluvial fans (range site 26-16) and 4 percent Hotsprings soils in narrow stringers throughout the unit (range site 26-16). Included areas make up about 10 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Rebel soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing, wildlife habitat, and irrigated cultivated crops.

The potential plant community on this unit is mainly Wyoming big sagebrush, Thurber needlegrass, and Indian ricegrass. The present vegetation in most areas is mainly Wyoming big sagebrush, Anderson peachbrush, and Nevada ephedra. The production of forage is limited by the low average annual precipitation and the moderate available water capacity. The suitability of this unit for rangeland seeding is poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated cultivated crops. Furrow, border, corrugation, and sprinkler irrigation systems are suited to the unit. The method used generally is governed by the crop grown. The moderately rapid movement of water in the soil should be considered when selecting and designing irrigation systems.

If surface drainage and a stable base are provided, damage from frost heaving is minimized on roads on this unit.

...this unit is about 10 percent Patna soils on ... (range site 27-9). The percentage varies ... area to another.

...can soil is very deep and well drained. It ... alluvium derived from various kinds of rock. ... the surface layer is pale brown sandy loam ... inches thick. The subsoil is yellowish brown ... loam about 9 inches thick. The substratum to ... 60 inches or more is stratified sandy loam to ... sand.

...ability of the Tocan soil is moderately slow. ... water capacity is moderate. Effective rooting ... 60 inches or more. Runoff is slow, and the ... water erosion is slight. The hazard of soil ... is slight.

...rington soil is very deep and well drained. It ... eolian deposits derived from various kinds of ... Typically, the surface layer is pale brown loamy fine ... 8 inches thick. The underlying material to a ... 60 inches or more is stratified, pale brown ... sand and sandy loam.

...ability of the Yerington soil is rapid. Available ... capacity is moderate. Effective rooting depth is 60 ... or more. Runoff is slow, and the hazard of water ... is slight. The hazard of soil blowing is moderate.

...This unit is used mainly for livestock grazing. It is also ... for irrigated crops.

...The potential plant community on the Tocan soil is ... Bailey greasewood, Indian ricegrass, and ... The present vegetation in most areas is ... Bailey greasewood, shadscale, and bottlebrush ... The production of forage is limited by the low ... annual precipitation. The suitability of this soil ... rangeland seeding is very poor. The main limitation is ... the low average annual precipitation.

...The potential plant community on the Yerington soil is ... Indian ricegrass, fourwing saltbush, ... needleandthread, and Bailey greasewood. The present ... vegetation in most areas is mainly low rabbitbrush, ... Indian ricegrass, Bailey greasewood, and spiny hopsage. ... The production of forage is limited by the low average ... annual precipitation. The suitability of this soil for ... rangeland seeding is very poor. The main limitation is the ... low average annual precipitation.

...Livestock grazing should be managed to protect this ... unit from blowing and drifting sand.

...If this unit is used for irrigated hay, pasture, and ... cultivated crops, the main limitations are the moderate ... available water capacity, slope, and the rapid ... permeability of the Yerington soil. Sprinkler irrigation is ... the most suitable method of applying water. Use of pipe, ... ditch lining, or drop structures in irrigation ditches ... facilitates irrigation and reduces ditch erosion.

...Roads can easily be constructed and maintained on ... this unit.

This map unit is in capability subclass IIe, irrigated, and VIIc, nonirrigated. The Tocan soil is in range site 27-18, and the Yerington soil is in range site 27-9.

651—Theon very gravelly sandy loam, 8 to 30 percent slopes. This shallow and very shallow, well drained soil is on hills and low mountains. It formed in residuum derived dominantly from andesite and rhyolite. Elevation is 4,200 to 6,500 feet. The average annual precipitation is about 5 inches, the average annual air temperature is about 49 degrees F, and the average frost-free period is 100 to 130 days.

Typically, the surface layer is pale brown very gravelly sandy loam about 2 inches thick. The subsoil is brown and reddish brown very gravelly clay loam and very gravelly loam about 9 inches thick. Weathered bedrock is at a depth of 11 inches. Hard bedrock is at a depth of 16 inches. Depth to weathered bedrock ranges from 8 to 14 inches. Depth to hard bedrock ranges from 10 to 20 inches.

Included in this unit are about 5 percent Rock outcrop on ridges and steep side slopes, 5 percent Singatse soils on steep south-facing side slopes (range site 27-27), and 5 percent Olac soils on north-facing side slopes (range site 26-25). Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another.

Permeability of this Theon soil is moderately slow. Available water capacity is very low. Effective rooting depth is 8 to 14 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing.

The potential plant community on this unit is mainly shadscale, Indian ricegrass, desert needlegrass, and Bailey greasewood. The present vegetation in most areas is mainly shadscale, Bailey greasewood, and Indian ricegrass. The production of forage is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and the very low available water capacity.

This unit is limited for roads because of the shallow depth to bedrock and slope in some areas. Roads should be designed to minimize cuts because of the limited depth to bedrock. Cutting and filling are reduced by building roads in the less sloping areas of the unit. Roads should be provided with adequate surface drainage. Erosion can be controlled and maintenance cost reduced by stabilizing areas that have been disturbed.

This map unit is in capability subclass VIIs, nonirrigated, and in range site 27-19.

652—Theon-Olac association. This map unit is on hills and low mountains. Slope is 30 to 75 percent. Elevation is 4,200 to 6,500 feet. The average annual

JSA NUMBER: Yerington – 009 **DATE:** 09/09/02 **NEW** X **REVISION**	**Company Performing the Job:** Brown and Caldwell	**SUPERVISOR:** Charles Zimmerman **SAFETY OFFICER:** Brian Bass
JOB TITLE OR TASK: Cover Materials: Subsurface soil sampling of off-site areas.	**TITLE OF PERSON(S) WHO PERFORMS JOB:** Site Managers: Brian Bass, Nathan Robison, Chad Leonard Operations Technician:	**ANALYSIS BY:** Brian Bass **REVIEWED BY:** **APPROVED BY:**

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE) AND/OR PERTINENT JOB SAFETY FORMS: Hard hat, safety goggles or glasses, steel-toed boots. As appropriate: rubber gloves, face shield, rubber boots or hip waders, half-mask respirator.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
1. Pre-Construction Safety Meeting.		1. All employees assigned to this task will attend a pre-construction safety meeting, which will include the pertinent JSAs, Standard Operating Procedures, types of potential hazards, and actual hazards present and controls for those hazards.
2. Sample location identification	1. Inhalation of fugitive dust	1. Avoid working in the area when excessive airborne dust is present. Find shelter if nearby (e.g., automobile). 2. Wear a respirator with appropriate cartridge when dust is present, until you can get shelter from the wind.
3. Collection of soil sample by hand and decontamination of equipment.	1. Skin irritation from dermal or eye contact. 2. Slipping or falling on concrete structures- sharp rock and protruding objects. 3. ENCOUNTERING CONTAINERS WITH SEALED AND UNLABELED CONTENTS ---UNKNOWN !!!! POTENTIAL FOR EXPLOSION OR INHALATION OF POISONOUS VAPOR OR DUST.	1. Wear rubber or latex gloves to prevent contact with hands and arms. 2. Wear safety glasses or goggles to prevent eye contact from dust. 3. Wear boots with treaded soles to reduce potential for slipping. 4. Never open containers of unknown contents. Notify Atlantic Richfield and B&C H&S Coordinator.
4. All Activities	1. Back, hand, or foot injuries during manual handling of materials.	1. Workers should inspect materials for slivers, jagged or sharp edges, and rough or slippery surfaces. 2. Workers should wipe off greasy, wet, slippery, or dirty objects before attempting to handle them. 2. In most cases, gloves or other protection should be used to prevent hand injuries. 3. Steel-toed boots should be used for protection of the feet when not in the water. 4. Routes should be surveyed for obstacles prior to moving materials from one location to another. 5. All three main factors in manual lifting (load location, task repetition, and load weight) must be considered when evaluating what is safe or unsafe to lift.

		7. All manual handling of heavy or bulky objects should be carefully planned to avoid injuries and damage to equipment.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
5. All Activities	1. Heat exhaustion or stroke.	1. Avoid strenuous work in ambient temperatures over 80 degrees F. 2. Wear light-colored clothing, shaded sunglasses, and hat that provides shade and adequate air movement. 3. Find cool, shady area for breaks or respite from heat. 4. If worker feels dizzy, has a headache, has cool, moist, or pale skin or is weak, immediately move to a cooler environment, loosen tight clothing, provide air circulation to area, and provide small amounts of cool water to drink. 5. If worker has a change in level of consciousness, high body temperature, red, hot skin, rapid or weak pulse, or rapid or shallow breathing, call the emergency phone number and give care in accordance with #4 above.
6. All Activities	1. Hypothermia or frostbite.	1. Avoid working in extreme cold. 2. Wear warm, layered clothing with adequate protection for hands and feet. 3. Find warm area out of the wind for breaks or respite from cold. 4. If worker experiences shivering, irregular pulse, numbness, glassy stare, impaired judgement, loss of muscle control with no shivering, or loss of consciousness, gently move worker to warm place, check vital signs, remove any wet clothing, cover with blankets and warm slowly. 5. If worker experiences loss of feeling or sensation in extremities, discolored or waxy skin, blisters or blue skin, remove wet clothing and jewelry, soak frostbitten area in warm water, cover with dry, sterile dressing (do not rub anything on the area), check vital signs.
7. Unsafe conditions.	1. All potential hazards.	1. Where a situation presents a hazardous condition, the exposed employee will be removed from the hazardous area until all necessary precautions have been taken to eliminate the hazard and ensure their safety.

Personnel Signatures		
JSA NUMBER: Yerington-009 **DATE:** 09/09/02 **NEW** X **REVISION**	**Company Performing the Job:** Brown and Caldwell	**SUPERVISOR:** Charles Zimmerman **SAFETY OFFICER:** Brian Bass
JOB TITLE OR TASK: Cover Materials: Subsurface soil sampling of off-site areas.	**TITLE OF PERSON(S) WHO PERFORMS JOB:** Site Managers: Brian Bass, Nathan Robison, Chad Leonard Operations Technician:	**ANALYSIS BY:** Brian Bass **REVIEWED BY:** **APPROVED BY:**